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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,044	01/09/2002	Y. C. Lim	FS00-001	1978
28112 7590 05/07/2008				
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EXAMINER				
DO, CHAT C				
ART UNIT		PAPER NUMBER		
2193				
MAIL DATE		DELIVERY MODE		
05/07/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/041,044

Applicant(s)

LIM, Y. C.

Examiner

CHAT C. DO

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/05/2007 and 02/06/2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. This communication is responsive to Amendment filed 12/05/2007 and 02/06/2008.
2. Claims 1-6 are pending in this application. Claims 1 and 4 are independent claims. This Office Action is made non-final after a RCE filed 02/06/2008.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara et al. (U.S. 5,524,022) in view of Allred et al. (U.S. 6,661,900)

Re claim 1, Kihara et al. disclose in Figures 1-2 under the prior art a graphics equalizer utilizing multichannel digital filter bank (e.g. Figure 1 as general architecture of a graphics equalizer) comprising: a plurality of first order or second order digital filters (e.g. col. 1 lines 22-26 and Figure 1 wherein each of equalizer 51x is considered as a second order filters), connected in a cascade fashion (e.g. Figure 1 and col. 1 line 26 as cascaded manner), whereby said electrical signals are enhanced, attenuated or kept the same (e.g. col. 1 lines 13-16 and lines 41-49 wherein the signal is boosted or attenuated or mix), after passing through said cascading sub-filters (e.g. col. 1 lines 41-49), wherein

said first order or second order digital filters are of the recursive type suitable for graphically equalizing electrical signals received via a communication path (e.g. col. 1 lines 22-28 as each of the filter in Figure 1 is IIR filter via the input path X), wherein said first or second order digital filters do not require multiple sampling frequencies (e.g. only a single path is entering each IIR filter as seen in Figure 1), and wherein said first and second order digital filters have parameters which allow users to shape said graphics equalizer's frequency spectra as desired (e.g. col. 1 lines 11-48 and col. 2 line 38-45).

Kihara et al. fail to disclose the parameters are programmable. However, Allred et al. also disclose a graphics equalizer which has programmable parameters which allow users to shape said graphics equalizer's frequency spectra as desired (e.g. Figure 1, col. 1 lines 16-48, and col. 3 lines 34-42),

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the programmable parameters as seen in Allred et al.'s invention into Kihara et al.'s invention because it would enable to have a flexible system (e.g. col. 1 lines 20-25 and col. 3 lines 30-42).

Re claim 4, it is a method claim having similar limitations as cited claim 1. Thus, claim 4 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

5. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara et al. (U.S. 5,524,022) in view of Allred et al. (U.S. 6,661,900), as applied to claims 1 and 4 respectively, in further view of Dyer (U.S. 4,947,360).

Re claim 2, Kihara et al. in view of Allred et al. fail to disclose the digital filters are first order and have a transfer function whose equation is $H_j(z) = (1-az^{-1})/(1-bz^{-1})$ absolute values of a and b are <1 ; a and b have the same sign. However, Dyer discloses the digital filters are first order and have a transfer function whose equation is $H_j(z) = (1-az^{-1})/(1-bz^{-1})$ (e.g. B(z) equation in col. 2 line 29 wherein $b = K_3$ and $a = -(K_2K_4-K_3)$) absolute values of a and b are <1 ; a and b have the same sign (e.g. all values of coefficients are cited in Table 1 in col. 4 less than 1).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the digital filters are first order and have a transfer function whose equation is $H_j(z) = (1-az^{-1})/(1-bz^{-1})$ absolute values of a and b are <1 ; a and b have the same sign as seen in Dyer's invention into Kihara et al. in view of Allred et al.'s invention because it would enable to improve the input signal (e.g. col. 1 lines 5-8).

Re claim 5, it is a method claim having similar limitations as cited claim 2. Thus, claim 5 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

6. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara et al. (U.S. 5,524,022) in view of Allred et al. (U.S. 6,661,900), as applied to claims 1 and 4 respectively, in further view of Cox et al. (U.S. 5,353,346).

Re claim 3, Kihara et al. in view of Allred et al. fail to disclose filters are second order and have a transfer function whose equation is $H_i(z) = \{1-2g_i\cos(p_i)z^{-1}+g_i^2z^{-2}\}/\{1-$

$2r_i \cos(p_i) z^{-1} + r_i^2 z^2$. However, Cox et al. disclose in Figure 2 filters are second order and have a transfer function whose equation is $H_i(z) = \{1 - 2g_i \cos(p_i) z^{-1} + g_i^2 z^2\} / \{1 - 2r_i \cos(p_i) z^{-1} + r_i^2 z^2\}$ (e.g. $H(z)$ in col. 3 line 50 wherein $g = 1$; $r = \text{beta}$; $p = 2\pi f_{\text{est}} T$ as seen in col. 6 line 10).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add filters are second order and have a transfer function whose equation is $H_i(z) = \{1 - 2g_i \cos(p_i) z^{-1} + g_i^2 z^2\} / \{1 - 2r_i \cos(p_i) z^{-1} + r_i^2 z^2\}$ as seen in Cox et al.'s invention into Kihara et al. in view of Allred et al.'s invention because it would enable to provide superior filter with low computational complexity (e.g. abstract and col. 1 line 61 to col. 2 line 4).

Re claim 6, it is a method claim having similar limitations as cited claim 3. Thus, claim 6 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Response to Arguments

7. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Chat C. Do/
Primary Examiner, Art Unit 2193

May 6, 2008